
Thank you for your request to our REL Reference Desk regarding the latest research on word work. Ask A REL is a collaborative reference desk service provided by the ten regional educational laboratories (REL) that, by design, functions much in the same way as a technical reference library. It provides references, referrals, and brief responses in the form of citations on research based education questions.

The information below represents the most rigorous research available. Researchers consider the type of methodology and give priority to research reports that employ well described and thorough methods. The resources were also selected based on the date of the publication with a preference for research from the last ten years. Additional criteria for inclusion include the source and funder of the resource.

Question: *What is the latest research on word work (spelling, vocabulary, phonics, phonological awareness)? Where can I find this research?*

Key words and search strings used in the search: *word work; AND instruction; spelling vocabulary, phonics, phonological awareness; reading instruction AND word work; foundational skills; beginning reading*

Search databases and websites:

1. ERIC: <http://www.eric.ed.gov/>
2. JSTOR: <http://www.jstor.org/action/showAdvancedSearch>
3. Google Scholar: www.google.com/scholar
4. Institute of Education Sciences (IES) Resources: <http://ies.ed.gov/pubsearch/>
5. What Works Clearinghouse: <http://ies.ed.gov/ncee/wwc/>

Citations Retrieved: (NOTE: Abstracts and executive summaries are copied directly from the reports when possible to ensure accuracy):

Aram, D., Abiri, S., & Elad, L. (2014). Predicting early spelling: The contribution of children's early literacy, private speech during spelling, behavioral regulation, and parental spelling support. *Reading and Writing: An Interdisciplinary Journal*, 27(4), 685-707. doi: 10.1007/s11145-013-9466-z

Abstract/Summary: The present study aimed to extend understanding of preschoolers' early spelling using the Vygotskian ("Mind in society: the development of higher psychological processes," Cambridge, Harvard University Press, 1978) paradigm of child development. We assessed the contribution of maternal spelling support in predicting children's word spelling level beyond the contribution of three internal child measures: early literacy (phonological awareness and letter naming), private speech while spelling (self-directed talk), and behavioral regulation. Children's private speech during spelling--their tool to regulate thinking--has not yet been studied

in the early literacy context. Fifty Israeli preschoolers ($M = 68.66$ months) of middle-high SES were videotaped while spelling words with their mothers and while spelling these words independently. Children's phonological awareness, letter naming, and behavioral regulation were assessed individually. Results showed that children's internal measures (early literacy, private speech while spelling, and behavioral regulation) predicted children's early spelling (63% of the variance), and the external measure of maternal spelling support added uniquely (12%), together explaining 75% of the variance in children's spelling level. Findings suggested that mothers adjust their spelling support to meet young children's existing literacy skills but also coach children to strive toward higher spelling performance. Furthermore, the study illuminates the role of a new measure in the context of children's early literacy-private speech during spelling.

Biemiller, A., & Boote, C. (2006). An effective method for building meaning vocabulary in primary grades. *Journal of Educational Psychology*, 98(1), 44-62. doi: 10.1037/0022-0663.98.1.44

Abstract/Summary: Teaching vocabulary to primary grade children is essential. Previous studies of teaching vocabulary (word meanings) using story books in the primary grades reported gains of 20%–25% of word meanings taught. The present studies concern possible influences on word meaning acquisition during instruction (Study 1) and increasing the percentage and number of word meanings acquired (Study 2). Both studies were conducted in a working-class school with approximately 50% English-language learners. The regular classroom teachers worked with their whole classes in these studies. In Study 1, average gains of 12% of word meanings were obtained using repeated reading. Adding word explanations added a 10% gain for a total gain of 22%. Pretesting had no effect on gains. In Study 2, results showed learning of 41% of word meanings taught. At this rate of learning word meanings taught, it would be possible for children to learn 400 word meanings a year if 1,000 word meanings were taught. The feasibility of teaching vocabulary to primary grade children is discussed.

Bowers, P. N., Kirby, J. R., & Deacon, S., H. (2010). The effects of morphological instruction on literacy skills: A systematic review of the literature. *Review of Educational Research*, 80(2), 144-179. doi: 10.3102/0034654309359353

Abstract/Summary: The authors reviewed all peer-reviewed studies with participants from preschool to Grade 8 for this meta-analysis of morphological interventions. They identified 22 applicable studies. Instructional effects (Cohen's d) were averaged by linguistic outcome categories (morphological sub-lexical, non-morphological sub-lexical, lexical, and supra-lexical) and comparison group (experimental group vs. control or experimental group vs. alternative training). The authors investigated the effects of morphological instruction (a) on reading, spelling, vocabulary, and morphological skills, (b) for less able readers versus undifferentiated samples, (c) for younger versus older students, and (d) in combination with instruction of other

literacy skills or in isolation. Results indicate that (a) morphological instruction benefits learners, (b) it brings particular benefits for less able readers, (c) it is no less effective for younger students, and (d) it is more effective when combined with other aspects of literacy instruction. Implications of these findings are discussed in light of current educational practice and theory.

Conrad, N. J., (2008). From reading to spelling and spelling to reading: Transfer goes both ways. *Journal of Educational Psychology*, 100(4), 869-878. doi: 10.1037/a0012544

Abstract/Summary: This study compares the effects of practice spelling and reading specific words on the orthographic representations in memory involved in reading both practiced words and new, unfamiliar words. Typically developing readers in Grade 2 (mean age = 7 years, 7 months) participated in a training study examining whether transfer can occur between reading and spelling following a series of reading and spelling practice sessions. Practice consisted of either repeated reading or repeated spelling of words with shared orthographic rime patterns. A series of mixed analyses of variance was used to examine generalization within skill and transfer across skill. Following practice, word-specific transfer across skill was found. Specifically, children were better able to spell words they had practiced reading and to read words they had practiced spelling. In addition, generalization to new words with practiced rime units was found both within a skill and across skills. However, transfer from spelling to reading was greater than transfer from reading to spelling. Results indicate that the orthographic representations established through practice can be used for both reading and spelling. Subsequently, reading and spelling curricula should be coordinated to benefit children maximally.

Coyne, E., Farrington-Flint, L., Underwood, J., & Stiller, J. (2011). Sensitivity to rime unit frequency and children's early word-reading strategies. *Journal of Research in Reading*, 35(4) 393-410. doi: 10.1111/j.1467-9817.2010.01474.x

Abstract/Summary: The current work examines children's sensitivity to rime unit spelling-sound correspondences within the context of early word reading as a way of assessing word-specific influences on early word-reading strategies. Sixty 6-7-year-olds participated in an experimental reading task that comprised word items that shared either frequent or infrequent rime unit correspondences. Retrospective self-reports were taken as measures of strategy choice. The results showed that the children were more accurate in identifying word items that shared a common rime unit (consistent items) when compared with those containing infrequent rime units (unique and exception items). Moreover, while non-lexical (phonological) attempts were most frequently applied across all word types, these resulted in lower levels of accuracy, especially for the exception word items. The current data support the argument that children are increasingly sensitive to rime unit sound-spelling correspondences during the early stages of their word reading and the nature of these word-specific orthographic representations shape their reliance on using particular lexical or non-lexical-based word-reading strategies.

Ehri, L.C. (2014). Orthographic mapping in the acquisition of sight word reading, spelling memory, and vocabulary learning. *Scientific Studies of Reading*, 18(1), 5-21. doi: 10.1080/10888438.2013.819356

Abstract/Summary: Orthographic mapping (OM) involves the formation of letter-sound connections to bond the spellings, pronunciations, and meanings of specific words in memory. It explains how children learn to read words by sight, to spell words from memory, and to acquire vocabulary words from print. This development is portrayed by Ehri (2005a) as a sequence of overlapping phases, each characterized by the predominant type of connection linking spellings of words to their pronunciations in memory. During development, the connections improve in quality and word-learning value, from visual non-alphabetic, to partial alphabetic, to full grapho-phonemic, to consolidated grapho-syllabic and grapho-morphemic. OM is enabled by phonemic awareness and grapheme-phoneme knowledge. Recent findings indicate that OM to support sight word reading is facilitated when beginners are taught about articulatory features of phonemes and when grapheme-phoneme relations are taught with letter-embedded picture mnemonics. Vocabulary learning is facilitated when spellings accompany pronunciations and meanings of new words to activate OM. Teaching students the strategy of pronouncing novel words aloud as they read text silently activates OM and helps them build their vocabularies. Because spelling-sound connections are retained in memory, they impact the processing of phonological constituents and phonological memory for words.

Kemp, N. (2006). Children's spelling of base, inflected, and derived words: Links with morphological awareness. *Reading and Writing*, 19(7) 737-765. doi: 10.1007/s11145-006-9001-6

Abstract/Summary: Two studies examined whether young children use their knowledge of the spelling of base words to spell inflected and derived forms. In Study 1, 5- to 9-year-olds wrote the correct letter (s or z) more often to represent the medial /z/ sound of words derived from base forms (e.g., noisy, from noise) than to represent the medial /z/ sound of one-morpheme control words (e.g., busy). In Study 2, 7- to 9-year-olds preserved the spelling of /z/ in pseudoword base forms when writing ostensibly related inflected and derived forms (e.g., kaise-kaisy). In both studies, the children's tendency to preserve the spelling of /z/ between base and inflected/derived words was related to their performance on analogy tasks of morphological awareness. These findings add to the growing body of evidence that children recognise and represent links of meaning between words from relatively early in their writing experience, and that morphological awareness facilitates the spelling of morphologically complex words.

Kim, Y-S., Al Otaiba, S., Puranik, C., Sidler Folsom, J., Grulich, L. (2014). The contributions of vocabulary and letter writing automaticity to word reading and spelling for kindergartners. *Reading and Writing*, 27(2), 237-253. doi: 10.1007/s11145-013-9440-9

Abstract/Summary: In the present study we examined the relation between alphabet knowledge fluency (letter names and sounds) and letter writing automaticity, and unique relations of letter writing automaticity and semantic knowledge (i.e., vocabulary) to word reading and spelling over and above code-related skills such as phonological awareness and alphabet knowledge. These questions were addressed using data from 242 English-speaking kindergartners and employing structural equation modeling. Results showed letter writing automaticity was moderately related to and a separate construct from alphabet knowledge fluency, and marginally ($p = .06$) related to spelling after accounting for phonological awareness, alphabet knowledge fluency, and vocabulary. Furthermore, vocabulary was positively and uniquely related to word reading and spelling after accounting for phonological awareness, alphabet knowledge fluency, and letter writing automaticity.

National Institute of Child Health and Human Development. (2000). *Report of the National Reading Panel. Teaching children to read: An evidence-based Assessment of the Scientific Research Literature on Reading and its Implications for Reading Instruction*. NIH Publication No. 00-4769. Washington, DC: US Government Printing Office.

Abstract/Summary: In 1997, Congress asked the NICHD, through its Child Development and Behavior Branch, to work with the U.S. Department of Education (ED) in establishing a National Reading Panel that would evaluate existing research and evidence to find the best ways of teaching children to read. The 14-member Panel included members from different backgrounds, including school administrators, working teachers, and scientists involved in reading research. On April 13, 2000, the National Reading Panel concluded its work and submitted its final reports. The Panel has not been reconvened since that time and does not continue to work on this issue.

Ouellette, G., Senechal, M., & Haley, Allyson. (2013). Guiding children's invented spellings: A gateway into literacy learning. *Journal of Experimental Education*, 81(2), 261-279. doi: 10.1080/00220973.2012.699903

Abstract/Summary: This teaching study tested whether guiding invented spelling through a Vygotskian approach to feedback would facilitate kindergarten children's entry into literacy more so than phonological awareness instruction. Participants included 40 kindergartners whose early literacy skills were typical of literacy-rich classrooms, and who were receiving a structured balanced literacy curriculum. The children were randomly assigned to one of two teaching conditions (phonological awareness; invented spelling) and participated in 16 teaching sessions over an 8-week period in kindergarten. Before these teaching sessions, the groups were equivalent in early literacy and language skills including alphabetic knowledge, phonological awareness and oral vocabulary. Children in both conditions saw growth in alphabetic knowledge and phonological awareness (marked by large effect sizes), but the invented-spelling group

showed more growth in invented spelling sophistication and learned to read more words on posttest. These advantages were reflected in medium to large effect sizes. Follow-up assessment in Grade 1 revealed potential lasting advantages for the invented spelling group. These findings support the view that with guidance and developmentally appropriate feedback, invented spelling promotes early literacy by providing a milieu for children to explore the relations between oral and written language. (Contains 3 tables and 1 figure.)

Park, Y., & Lombardino, L. J. (2013). Exploring the nature of effective word study instruction for struggling readers: Practical applications for broader perspective of the simple view of reading. *International Journal of Special Education*, 28(2), 81-90. Retrieved from <http://files.eric.ed.gov/fulltext/EJ1023311.pdf>

Abstract/Summary: Effective reading instruction plays an important role in improving students' outcomes in reading achievement. This paper is designed to serve as a tutorial for translating the simple view of reading model into classroom practices for improving early reading instruction. This model is used as a framework for facilitating teachers' word study knowledge for instructing both typically developing readers and struggling readers. Scientific studies on the developmental relationships between component reading skills and reading achievement and classroom strategies to facilitate effective word study instruction are discussed in the context of this model.

Wanzek, J. (2014). Building word knowledge: Opportunities for direct vocabulary instruction in general education for students with reading difficulties. *Reading & Writing Quarterly*, 30(2), 139-164. doi: 10.1080/10573569.2013.789786

Abstract/Summary: Direct vocabulary instruction is 1 critical component of reading instruction. Although most students in the elementary grades need to continue building their vocabulary knowledge, students with reading difficulties are at the greatest risk of falling further behind each year in vocabulary and concept knowledge without effective instruction. This study examined the amount and type of direct vocabulary instruction available for students with reading difficulties during core classroom reading instruction and supplemental reading interventions. Fourteen 2nd-grade classroom and reading intervention teachers serving students with reading difficulties in 3 elementary schools in 3 states participated in the study. Results suggested that about 8% of core classroom reading instruction was devoted to direct vocabulary instruction with a focus on word definitions and providing examples of word meaning. Minimal amounts of direct vocabulary instruction occurred in supplemental reading interventions. Thus, students with reading difficulties had limited opportunities through core reading instruction and supplemental reading interventions to receive research-based, effective vocabulary instruction.

What Works Clearinghouse (2013). *Fast ForWord®: WWC Intervention Report*. Washington, DC: U.S. Department of Education. Retrieved from:
http://ies.ed.gov/ncee/wwc/pdf/intervention_reports/wwc_ffw_031913.pdf

Abstract/Summary: Program Description: Fast ForWord® is a computer-based reading program intended to help students develop and strengthen the cognitive skills necessary for successful reading and learning. The program, which is designed to be used 30–100 minutes a day, 5 days a week, for 4–16 weeks, includes three series. The Fast ForWord® Language2 series and the Fast ForWord® Literacy3 series aim to build cognitive skills such as memory, attention, processing, and sequencing. They also strive to build language and reading skills, including listening accuracy, phonological awareness, and knowledge of language structures. The Fast ForWord® to Reading4 series (also known as the Fast ForWord® Reading series) aims to increase processing efficiency and further improve reading skills such as sound–letter associations, phonological awareness, word recognition, knowledge of English language conventions, vocabulary, and comprehension. The program is designed to adapt the nature and difficulty of the content based on individual student’s responses. Research: The What Works Clearinghouse (WWC) identified nine studies of Fast ForWord® that both fall within the scope of the Beginning Reading topic area and meet WWC evidence standards. Seven studies meet standards without reservations and two studies meet WWC evidence standards with reservations, and together, they included 1,390 students from several areas of the United States and Western Australia. The WWC considers the extent of evidence for Fast ForWord® on the reading skills of beginning readers to be medium to large for two outcome domains—alphabetic and comprehension—and small for one outcome domain—reading fluency. There were no studies that meet standards in the general reading domain, so we do not report on the effectiveness of Fast ForWord® for that domain in this intervention report.

Referrals

Organizations:

- Reading is Fundamental: <http://www.rif.org>
- The Meadows Center for Preventing Educational Risk: <http://www.meadowscenter.org>
- The IRIS Center: <http://iris.peabody.vanderbilt.edu>
- Florida Center for Reading Research: <http://www.fcrr.org>
- Reading Rockets: <http://www.pbs.org/launchingreade>

Federally Funded Resources:

- Institute of Education Sciences (IES), public search engine available at:
<http://ies.ed.gov/pubsearch/>
- What Works Clearinghouse: <http://ies.ed.gov/ncee/wwc/>

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